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He does indeed give two plates of frequency polygons, but his distributions are for number of flowers measured on particular dates, with no statement as to their size, and for relative frequency of flowers of certain sizes, with no data on the actual number of flowers measured or the number of plants upon which they were borne. Apparently the parents upon which data were taken were too few to warrant such sweeping conclusions.

In the second paper, also, one gathers that the F_2 generation there reported on is more variable than the F_1 generation; but no data are recorded. This paper purports only to be a note, however, and one may expect some data of greater consequence when the really large amount of work that the writer has done is reported in full.—E. M. EAST.

Knot disease of citrus trees.—HEDGES and TENNY[9] give a complete account of a knot disease of citrus trees that had been briefly described in a preliminary account by Miss HEDGES.[10] The disease has been found on lime trees in Jamaica and in one instance in Florida. It manifests itself by woody knots or swellings which appear on the branches and trunks of the diseased trees. The knots are usually round or somewhat elongated in the direction of the axis of the branch which bears them. They attain a diameter of 2–3 inches, and by their growth usually girdle the branch upon which they are seated, this causing the death of all the parts of the branch above the knot. Groups of fascicled branches, forming witches-brooms, often grow out from the knots, but these branches also are short-lived. The knots consist mostly of woody tissue, at first covered by bark which soon dies and crumbles away. All the tissues of the knots, as well as the tissues of the branches near the knots, are found to be infected with the brown mycelium of a fungus which was described by Miss HEDGES as *Sphaeropsis tumefaciens*. The mycelium of this parasite has been observed to spread to a distance of 45 cm., and it seems probable that it can spread to greater distances. Secondary knots are produced by the mycelium which spreads through the branches. The growth of the fungus on a large number of media, its characteristics, and numerous infection experiments are described at length by the authors.—H. HASSELBRING.

The cause of leaf asymmetry.—BOSHART, working in GOEBEL'S laboratory, reports the results of certain observations and experiments on asymmetry and anisophylly.[11] He concludes that the size of any given leaf part is determined by the area it occupies in the vegetative point. Further development depends on nutrition, a poor food supply causing but slight enlargement of the part, whereas a good food supply causes considerable enlargement. The vegetative point, on the other hand, is unrelated to nutrition, so far as its symmetry is concerned. Contrary to most previous investigators, BOSHART finds no evidence that gravity or light influences leaf symmetry. It is believed rather that both anisophylly and leaf asymmetry are merely an expression of the symmetry of the plant as a whole. For example, anisophylly, and in most instances asymmetry also, is associated with dorsiventrality, radial shoots being characterized commonly by isophylly and symmetry. It seems very doubtful if this radical view, giving little or no place to the operation of external factors, will displace the many experimental contributions of past years. Even in this contribution it is admitted that good nutrition can result in the development of the vegetative point of a dorsiventral shoot into a radial shoot. It would seem, then, according to BOSHART, that external factors determine what sort of a shoot develops, but that the type of leaf is tied up inexorably with a particular kind of shoot.—HENRY C. COWLES.

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[9] HEDGES, F., and TENNY, L. S., A knot of citrus trees caused by *Sphaeropsis tumefaciens*. Bur. Pl. Ind. Bull. 247. pp. 9–74. *pls. 10. figs. 8.* 1912.

[10] HEDGES, FLORENCE, *Sphaeropsis tumefaciens*, nov. sp., the cause of the lime and orange knot. Phytopath. **1**:63–65. *pl. 1.* 1911.

[11] BOSHART, K., Beiträge zur Kenntnis der Blattasymmetrie und Exotrophie. Flora **103**:91–124. 1911.

Photometric leaves and shoots.—WIESNER in continuing his already very extensive studies upon the light relations of plants returns to the consideration of the orientation of leaves in response to the direction of incident light. Fixed and variable positions[12] are distinguished and examples of the latter, which he regards as the more perfect response, are multiplied, the legumes furnishing the major portion. More exact studies are made of leaves only apparently related to light and termed pseudophotometric,[13] in contrast to those actually orienting themselves in response to incident light, and emphasis is laid upon the part played by epinasty and geotropism acting before and simultaneously with phototropism. Most photometric leaves are found to be pseudophotometric in the earlier stages of their development.

Relations similar to those existing in leaves are shown to obtain for shoots.[14] All shoots with photometric leaves are shown to be themselves photometric, but the category also includes the shoots of such conifers as *Abies* and *Tsuga*, with leaves showing very slight responses to light. The effect of light of different intensities is to be seen in the shoots of *Taxus baccata*, being perpendicular, that is showing euphotometry, while with more intense light they become panphotometric. Some interesting cases of the photometry of anisophyllous shoots are also discussed.—GEO. D. FULLER.

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[12] WIESNER, J. v., Über fixe und variable Lichtlage der Blätter. Ber. Deutsch. Bot. Gesells. **29**:304–307. 1911.

[13] WIESNER, J. v., Über aphotometrische, photometrische, und pseudophotometrische Blätter. Ber. Deutsch. Bot. Gesells. **29**:355–361. 1911.

[14] WIESNER, J. v., Über die Photometrie von Laubsprossen und Laubsprossystemen. Flora **105**:127–143. 1913.